

Claims

1. Method of providing switching signals in which those switching signals are generated depending on whether a switching device is selectively actuated by a user, characterized in that within the framework of the actuation of the switching device an enabling signal is coupled into the user and transmitted through the user and that the switching signal is generated based on the enabling signal coupled into the user.

2. Method according to claim 1, characterized in that the enabling signal is transferred through the user to a central detection zone.

3. Method according to claim 1 or 2, characterized in that several switching devices are provided and each switching device generates a switching device specific enabling signal.

4. Method according to at least one of the claims 1 to 3, characterized in that the enabling signal is coupled into the user on the basis of electrical field interaction effects.

5. Method according to at least one of the claims 1 to 4, characterized in that the enabling signal contains a data telegram.

6. Method according to at least one of the claims 1 to 5, characterized in that the enabling signal is generated depending on the actuation of the switching device.

7. Method according to at least one of the claims 1 to 6, characterized in that through a user-side key device carried close to the body a key signal is generated, which is also coupled into the user.

8. Method according to at least one of the claims 1 to 7, characterized in that the switching signal is generated depending on whether the key device is present in the region of the user and/or provides defined signal patterns.

9. Method according to at least one of the claims 1 to 8, characterized in that the central detection is carried out through a seat surface electrode.

10. Method according to at least one of the claims 1 to 9, characterized in that the seat surface electrode is integrated into a vehicle seat.

11. Method according to at least one of the claims 1 to 10, characterized in that by contacting of the switching device by the user a vibratory system is coupled to him and that means are provided through which it can be detected whether the user is coupled with that vibratory system and that depending on whether it

is detected that a coupling state exists with the vibratory system, the switching signal is generated.

12. Method according to at least one of the claims 1 to 11, characterized in that the vibratory system is coupled with the user over a tactile contact by a capacitive way.

13. Method according to at least one of the claims 1 to 12, characterized in that a signal event is coupled into the user by a capacitive way and that depending on an event absorption property, the switching signal is generated.

14. Method according to at least one of the claims 1 to 13, characterized in that the switching device forms a modulated signal drain.

15. Method according to at least one of the claims 1 to 14, characterized in that the modulation of the drain is carried out switching device specifically.

16. Method according to at least one of the claims 1 to 15, characterized in that the modulation of the drain is carried out depending on a signal content of the signal event coupled into the user.

17. Switching system for providing switching signals in which those switching signals are generated depending on whether a

switching device is selectively actuated by a user, characterized in that the switching device is configured such that in the framework of the actuation of the switching device an enabling signal is coupled into the user and transmitted through the user to a detection zone, and the detection zone is coupled with a switching signal generator, which is configured such that it generates the switching signal based on the enabling signal coupled into the user.

18. Switching system according to claim 17, characterized in that the switching device has at least one switching contact zone.

19. Switching system according to claim 17 or 18, characterized in that the switching device has several switching contact zones.

20. Switching system according to at least one of the claims 17 to 19, characterized in that the switching device has manually actuatable switching means and that depending on the manual actuation of the switching means corresponding to that manual actuation enabling signals are generated and coupled into the user.

21. Switching system according to at least one of the claims 17 to 20, characterized in that the switching device can be disposed in the dashboard region.

22. Switching system according to at least one of the claims 17 to 21, characterized in that the switching device is provided on a switching lever.

23. Switching system for providing switching signals in which those switching signals are generated depending on whether a switching device provided in the in the region of a user environment is selectively actuated by a user, characterized in that the switching device is constructed such that in the framework of the actuation of the switching device an enabling signal is coupled into the user and is transmitted through the user to a detection zone and the detection zone is coupled with a switching signal generator, which is configured such that it generates the switching signal on the basis of the enabling signal coupled into the user.

24. Switching arrangement for a vehicle door lock, for generating a switching signal for the selective locking and/or unlocking of a vehicle door, comprising:

a signal processing device provided on the vehicle side for processing an input signal,

a switching signal output device for controlling a door lock device based on an evaluation result of the signal processing device,

a signal receiving device on the vehicle side in signal communication with the signal processing device for detecting an input signal,

a mobile key device with a key code generating device for generating a key data sequence and a key signal output device for transmitting the key data sequence in the receiving region of the vehicle side receiving device, characterized in that the signal receiving device has a receiving element for receiving an input signal upon contact of a vehicle side component through the carrier of the mobile key device.

25. Switching arrangement according to claim 24, characterized in that the mobile key device has a coupling element for coupling an event into the carrier of the key device.

26. Switching arrangement according to claim 25, characterized in that the event is coupled by a capacitive way into the carrier of the key device.

27. Switching arrangement according to claim 24 or 25, characterized in that the event is configured as a data telegram.

28. Switching arrangement according to claim 27, characterized in that the data telegram is configured such that it enables the control of the switching signal output device.

29. Switching arrangement according to at least one of the claims 24 to 28, characterized in that in addition to the data telegram transferred through tactile contact a further data exchange with the mobile key device is carried out.

30. Switching arrangement according to claim 29, characterized in that the further data exchange is carried out on the basis of electromagnetic, optical or acoustic interaction effects.

5 31. Switching arrangement according to at least one of the claims 24 to 30, characterized in that the further data exchange is carried out through a blue-tooth device.

10 32. Switching arrangement according to at least one of the claims 25 to 31, characterized in that the coupling element is disposed in the area of the door grip of a vehicle door.

33. Switching arrangement for a vehicle door lock, for generating a switching signal for the selective locking or unlocking of a vehicle door, comprising:

15 a signal processing device provided on the vehicle side for processing an input signal,

a switching signal output device for controlling a door lock device based on an evaluation result of the signal processing device,

20 a signal receiving device on the vehicle side coupled with the signal processing device for detecting an input signal,

a mobile key device with a key code generating device for generating a key data sequence and a key signal output device for transmitting the key data sequence in the receiving region of the vehicle side receiving device, characterized in that in the region

of the vehicle a signal transmission device is provided, which has a coupling element for coupling of a signal upon contact of the vehicle into the carrier of the mobile key device.

34. Mobile key device of a switching arrangement
5 according to at least one of the claims 24 to 33.

35. Vehicle comprising the vehicle side components of the switching arrangement according to at least one of the claims 24 to 34.

36. Method of controlling a vehicle door lock, with
10 generating a switching signal for the selective locking and/or unlocking of a vehicle door, in which by means of a signal processing device provided on the vehicle side an input signal is processed and based on this signal processing a switching signal output device is controlled for corresponding actuation of a door
15 lock device based on an evaluation result of the signal processing device, wherein the signal processing device receives the input signal through a signal receiving device provided on the vehicle side and by means of a mobile key device a key data sequence is generated, which is coupled through a key signal output device into
20 the receiving region of the vehicle side receiving device, characterized in that at least one signal relevant for the control of the door lock device is generated through the contact of a coupling element provided on the vehicle side.

37. Method of detecting the presence or movement of an object in a danger region in which by means of an electrode device electrical field characteristics are detected in the danger region or in an advanced zone and evaluated by means of a testing
5 procedure.

38. Method according to claim 37, characterized in that changes in the electrical field characteristics are evaluated in the framework of the testing procedure.

39. Method according to claim 37 or 38, characterized in
10 that the testing procedure considers different testing criteria for different system states.

40. Method according to at least one of the claims 37 to 39, characterized in that the testing procedure considers
adjustment procedure relevant changes of the electrical field
15 characteristics in the danger zone or the advanced zone.

41. Method according to at least one of the claims 37 to 40, characterized in that the electrical field characteristics in the danger zone or the advanced zone are detected based on a capacitance detection of the electrical field system defined by the
20 electrode device and the adjoining environment region.

42. Method according to at least one of the claims 37 to 41, characterized in that the detected changes of the electrical

field characteristics of the monitored region are taken as judgement basis whether there is a movement of an object into the monitored region and/or out of it.

5 43. Method according to at least one of the claims 37 to 42, characterized in that on the electrode device a mixed frequency results in the range of 0.42 to 12 kHz.

44. Method according to at least one of the claims 37 to 43, characterized in that several electrode devices are provided.

10 45. Method according to at least one of the claims 37 to 44, characterized in that the electrode devices are further taken for generation of input signals for a contact sensor system.

46. Method according to at least one of the claims 37 to 45, characterized in that the testing procedure provides different testing priorities for different system states.

15 47. Method according to at least one of the claims 37 to 46, characterized in that before the initiation of a motion process or within the framework of the initiation of a motion process a system adjustment is carried out.

20 48. Method according to at least one of the claims 37 to 47, characterized in that based on the evaluation results generated

on the part of the testing procedure an adjustment of the switching-off criteria is carried out.

49. Method according to at least one of the claims 37 to 48, characterized in that the adjustment of the switching-off criteria is carried out such that in detecting an object or a movement of an object, especially a hand, in the monitored region, a drive force control with greater sensitivity and/or a reduction of the drive speed is carried out.

50. Method according to at least one of the claims 37 to 49, characterized in that in recognition of an object or the movement of an object, especially a hand or a finger, in the monitored region an acoustic warning signal is outputted.

51. Method according to at least one of the claims 37 to 50, characterized in that the activation of the monitoring system is carried out as a function of selected vehicle operating parameters and/or state parameters of the safety system.

52. System for detecting the presence or movement of an object in a danger region with an electrode device for detecting electrical field characteristics in the danger region or in an advanced zone and an evaluation switching device for evaluation of the emitted electrical field characteristics by means of a testing procedure.

53. System according to claim 52, characterized in that the evaluation switching device is configured such that it evaluates changes in the electrical field characteristics in the framework of the testing procedure.

5 54. System according to claim 52 or 53, characterized in that the evaluation switching device is configured such that the processed testing procedure considers different testing criteria for different system states.

10 55. System according to at least one of the claims 52 to 54, characterized in that the evaluation switching device is configured such that it considers the testing procedure of adjustment procedure relevant changes of the electrical field characteristics in the danger region or the advanced zone.

15 56. System according to at least one of the claims 52 to 55, characterized in that the evaluation switching device is configured such that the electrical field characteristics in the danger region or the advanced zone are detected by means of a capacitance detection of the electrical field system defined by the electrode device and the adjoining environment region.

20 57. System according to at least one of the claims 52 to 56, characterized in that the evaluation switching device is configured such that the detected changes of the electrical field characteristics of the monitored region are taken as judgement

basis whether there is a movement of an object into the monitored region and/or out of it.

58. System according to at least one of the claims 52 to 57, characterized in that the electrode device is connected in the monitoring system such that a starting frequency in the range of 100 to 650 kHz is attached to it.

59. System according to at least one of the claims 52 to 58, characterized in that several electrode devices are provided.

60. System according to at least one of the claims 52 to 59, characterized in that the electrode devices form part of a contact sensor system.

61. System according to at least one of the claims 52 to 60, characterized in that the evaluation switching device is configured such that the testing procedure provides different testing priorities for different system states.

62. System according to at least one of the claims 52 to 61, characterized in that the monitoring system is configured such that before initiating a movement procedure or in the framework of the initiation of a movement procedure a system adjustment is carried out.

63. System according to at least one of the claims 52 to 62, characterized in that the electrode device is configured as a flat electrode.

64. System according to at least one of the claims 52 to 63, characterized in that the electrode device comprises beam structures.

65. System according to at least one of the claims 52 to 64, characterized in that the electrode device is formed by electrically conductive mesh, wire, foil, plate devices and/or coating structures.

66. System according to at least one of the claims 52 to 65, characterized in that several electrode devices are provided and that the respective electrode devices each are at least partly assigned with self-standing evaluation switching devices.

67. System according to at least one of the claims 52 to 66, characterized in that the evaluation results of the discrete evaluation switching devices can be collected and fed to a total evaluation.

68. Method of effecting a data transfer between a master system (transmitter) and a slave system (receiver) in which on the part of the master system a signal event will be transmitted to a receiving region of the slave system and the receiving pickup

characteristics of the slave system are modulated in a defined manner and detected and evaluated on the part of the master system.

69. Method according to claim 68, wherein the data transfer is effected based on capacitive interaction effects.

5 70. Method according to claim 68 or 69, wherein on the part of the master system, a pilot sequence is emitted and during the input of the pilot sequence, the input impedance of the slave system is modulated based on a data pattern.

10 71. Method according to at least one of the claims 68 to 70, wherein on the part of the master system the modulated change in the input impedance of the slave system is detected.

15 72. Method according to at least one of the claims 68 to 71, wherein from the modulation pattern of the input impedance of the slave system detected by the master system, a data set is generated and this data set serves as the basis for the information content or for permitting the advance of the data transfer from the master system to the slave system.

20 73. Method according to at least one of the claims 68 to 72, wherein in the region of the master system data is recovered from the signals obtained from the pickup property of the slave system and on the basis of which a coding of the further data sent out by the slave system is effected.

74. Method according to at least one of the claims 68 to 73, wherein in the area of the slave system a time value is taken into consideration in the generation of the relevant data pattern for the modulation of the input impedance.

5 75. Method according to at least one of the claims 68 to 74, wherein in the region of the slave system for the modulation of the input impedance an information content of the signals generated on the part of the master system are considered.

10 76. Method according to at least one of the claims 68 to 75, wherein the modulation of the input impedance of the slave system is carried out based upon an inverse approach with respect to the coding procedure.

15 77. Method according to at least one of the claims 68 to 76, wherein the coding procedure determined by the decisive data pattern given by the modulation of the input impedance on the part of the slave system is configured or correlated on the basis of an information content of a signal sequence outputted on the part of the master system.

20 78. Method according to at least one of the claims 68 to 77, wherein in the framework of the dialogue pickup a congruence analysis is initially carried out on the basis of a low coding level and that the coding level is then raised.

79. Method according to at least one of the claims 68 to 78, wherein the information content decisive for the raised coding level can be transported at least initially to a lower coding level.

5 80. Method according to at least one of the claims 68 to 79, wherein through the master system a signal sequence forming the authorization code can be selectively outputted.

10 81. Method according to at least one of the claims 68 to 80, wherein through the signal of the slave system recovered from the impedance modulation a configuration change of the master system can be effected.

15 82. Method according to at least one of the claims 68 to 81, wherein the data transfer between the master system and the slave system is used for effecting a numerical, alphabetical or value setting or access verification process.

83. Method according to at least one of the claims 68 to 82, wherein the data transfer between the master system and the slave system is used for effecting a process to alter the locking state of a motor vehicle.

20 84. Method according to at least one of the claims 68 to 83, wherein the data transfer between the master system and the

slave system is used as a clearing signal for the function of devices.

85. Method according to at least one of the claims 68 to 84, wherein the data transfer between the master system and the slave system is used to carry out a presence analysis.

86. System for effecting a data transfer with:
a master system component (transmitter) and
a slave system component (receiver),
wherein the master system component is constructed such that it is suitable for outputting a signal event in the receiver region of the slave system component, and
the slave system component is configured such that it enables the modulation in a defined manner of the receiving characteristics, wherein
in the region of the master system component provisions are encountered, which detect the changes in the receiving characteristics of the slave system component and based upon this detection determines the further data transfer.

87. Master system component for a system according to claim 86, wherein it has a signal output device configured as a surface electrode.

88. Master system component according to claim 87, wherein it comprises an electronic signal processing device.

89. Master system component according to claim 88, wherein the signal processing device has access to a key data storage device.

90. Master system component according to at least one of the claims 87 to 89, wherein it is housed in a check card-shaped base body.

91. Master system component according to at least one of the claims 87 to 90, wherein it forms part of a vehicle key system.

92. Slave system component for a system according to claim 86, wherein it has a receiving device for receiving input events on the basis of capacitive interaction effects.

93. Slave system component according to claim 92, wherein the receiving device is arranged in the region of a cashier system, a personal traffic region, a sales system or a business.

94. Slave system component according to claim 92, wherein it forms part of a vehicle door locking system.

95. Method of changing the locking state of a motor vehicle by effecting a data transfer between a master system (transmitter/key) and a slave system (receiver/vehicle side switching component) in which on the part of the master system a signal event is transmitted to a receiving region of the slave

system and the receiver pickup characteristics of the slave system are modulated in a defined way and detected and evaluated on the part of the master system.

5 96. Method of changing the locking state of a motor vehicle by effecting a data transfer between a master system (key device) and a slave system (vehicle side switching component), especially according to claim 95, in which on the part of the slave system a signal event is transmitted to a receiving region of the master system and the receiving pickup characteristics of the
10 master system are modulated in a defined way and detected and evaluated on the part of the slave system.

97. Method according to claim 95 or 96, wherein the data transfer is carried out on the basis of capacitive exchange effects.